Bonding Atoms

A molecule or compound is formed when two or more atoms bond together. A **chemical bond** is the **force that holds atoms together**. Each **atom** has a **specific number of bonds** that can be made. Noble gas atoms are the only elements that never want to form bonds.

A **covalent** **bond** is formed between **two non-metal atoms that share a pair of electrons**. A covalent bond between two or more atoms forms a **molecule**. Some common molecules are water H2O, glucose C6H12O6 and nitrogen gas N2.

Later we will study how atoms gain or lose electrons to form ions. **Ions are atoms with an electric charge**. Oppositely charged ions are attracted to each other and form ionic bonds. An **ionic bond** is formed by an **electrical attraction** between **a metal ion and a non-metal ion**. An ionic bond between two ions forms a **compound**. Some common compounds are salt NaCl, iron oxide Fe2O3 or copper oxide Cu2O.

The textbook uses the term “combining capacity” to describe how many bonds an atom makes.

**Bonding capacity** or combining capacityis the ability of an atom of an element to chemically combine with other atoms. The periodic table can be used to determine the bond capacity of an element.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Group** | 1 | 2 | 13 | 14 | 15 | 16 | 17 | 18 |
| **# Bonds** | 1 | 2 | 3 | 4 | 3 | 2 | 1 | 0 |
| **Example**  **Element** | Na | Be | Al | C | P | O | Cl | Ne |

Homework:

1. Read p 62 – 63

2. Copy and label the right side of Fig 4.

3. Answer p 63 #1 – 3,5

**Bonding Atoms**

A molecule or compound is formed when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. A chemical **bond** is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Each atom has a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that can be made. **Noble gas** atoms are the only elements that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ want to form bonds.

A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is formed between two non-metal atoms \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. A **covalent bond** between two or more atoms **forms** a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Some common molecules are water \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, glucose \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and   
nitrogen gas \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Later we will study how **atoms gain or lose electrons to form ions**. **Ions** are atoms with an \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Oppositely charged ions are attracted to each other and form ionic bonds. An ionic bond is formed by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. An **ionic bond** between two ions forms a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Some common compounds are salt \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, iron oxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or copper oxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The textbook uses the term “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” to describe how many bonds an atom makes. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_or combining capacityis the ability of an atom of an element to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The periodic table can be used to determine the bond capacity of an element.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Group** | 1 | 2 | 13 | 14 | 15 | 16 | 17 | 18 |
| **# Bonds** |  |  |  |  |  |  |  |  |
| **Example**  **Element** |  |  |  |  |  |  |  |  |

Activity: Building Models

Homework: 1. Read p 62 – 63

2. Copy and label the right side of Fig 4.

3. Answer pg 63 #**1 – 3,5**